Tornadoes

Hazard Terminology
Tornado – A rapidly rotating vortex or funnel of air extending ground-ward from a cumulonimbus cloud.

Overall, West Virginia ranks 38th in the nation for frequency of tornadoes and has never had a federally declared disaster as a result of a tornado. While West Virginia has a relatively low risk of tornadoes compared to other states, the state is not immune. According to NOAA, West Virginia has an average of two weak tornadoes a year (NCDC, 2002). On March 5, 2003, after a series of tornadoes caused mass devastation in several states, West Virginia declared a state disaster. More than $240,000 was distributed for recovery efforts due to this event.

A tornado is "a rapidly rotating vortex or funnel of air extending ground-ward from a cumulonimbus cloud" (MHIRA, 1997). They typically spawn from thunderstorms, hurricanes, and wildfires. While roughly 1,000 tornadoes a year are generated by thunderstorms, relatively few touch down. The damage tornadoes are famous for occurs when the funnel makes actual contact with the ground. As wind speeds increase, so does the level of devastation left by a tornado. The Fujita Tornado Scale (Table 5.1A) provides a guideline for how much damage is caused at various wind speeds.

Table 5.1A: Fujita Tornado Scale

Scale Value	Wind Speed	Description of Damage
F0	40-72 mph	Light damage. Some damage to chimneys; tree branches broken off; shallow-rooted trees pushed over; sign boards damaged.
F1	73-112 mph	Moderate damage. The lower limit is the beginning of hurricane wind speed. Roof surfaces peeled off; mobile homes pushed off foundations or overturned; moving autos pushed off roads.
F2	113-157 mph	Considerable damage. Roofs torn off houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light-object missiles generated.
F3	158-206 mph	Severe damage. Roofs and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted; heavy cars lifted off ground and thrown.
F4	207-260 mph	Devastating damage. Well-constructed houses leveled; structures with weak foundations blown off some distance; cars thrown; large missiles generated.
F5	261-318 mph	Incredible damage. Strong frame houses lifted off foundations and carried considerable distances to disintegrate; automobile-size missiles fly through the air in excess of 100 yards; trees debarked.

"Tornado Alley," which includes Kansas, Oklahoma, Arkansas, Missouri, and portions of Texas, is known for its susceptibility to tornadoes. This area of high susceptibility does not extend into West Virginia. According to the Multi-Hazard Identification and Risk Assessment Report, tornadoes tend to take the path of least resistance, so it may be that the mountains that occupy West Virginia help to limit the number of tornadoes the state experiences.

As mentioned earlier, West Virginia has never had a federally declared disaster due to a tornado. However, the National Climatic Data Center reports several tornadoes within the state. Figure 5.1A depicts areas of the state most affected by tornadoes. This map does not distinguish the strength of the tornado, only the occurrence based on NCDC data. Many of the tornadoes represented were too weak to cause any damage at all.

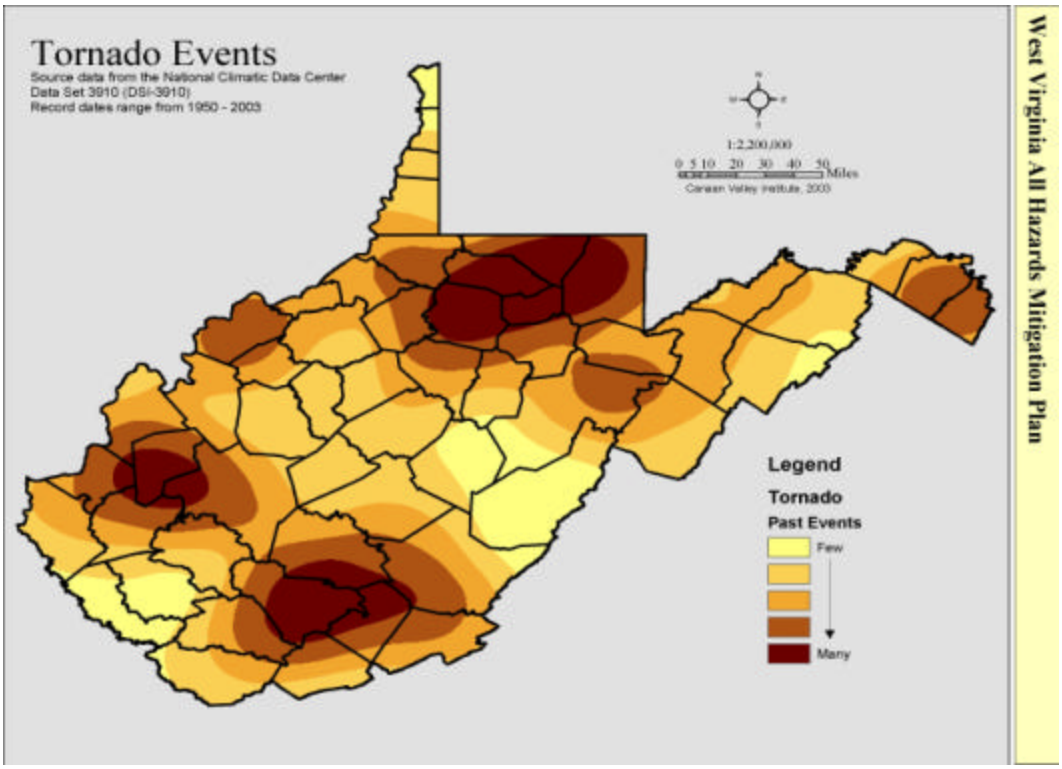

Figure 5.1A: West Virginia Tornado Events (NCDC)

Overall, the likelihood of West Virginia being hit by a tornado strong enough to cause significant damage is relatively low.

From the West Virginia All Hazard Mitigation Plan, West Virginia Office of Emergency Services